FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	CB331707	Client:	Landau Associates
Date Received:	02/11/10	Project:	1198001.010.011, F&BI 002117
Date Extracted:	02/12/10	Lab ID:	002117-01
Date Analyzed:	02/12/10	Data File:	002117-01.041
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	109	60	125
Holmium	105	60	125

Analyte:	Concentration ug/L (ppb)
Copper	119
Zinc	666
Lead	7.59

Analysis For Total Metals By EPA Method 200.8

Client ID:	CB330001	Client:	Landau Associates
Date Received:	02/11/10	Project:	1198001.010.011, F&BI 002117
Date Extracted:	02/12/10	Lab ID:	002117-02
Date Analyzed:	02/12/10	Data File:	002117-02.042
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	110	60	125
Holmium	104	60	125

Analyte:	Concentration ug/L (ppb)
Copper	163
Zinc	193
Lead	24.4

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Landau Associates
Date Received:	Not Applicable	Project:	1198001.010.011, F&BI 002117
Date Extracted:	02/12/10	Lab ID:	I0-0076 mb
Date Analyzed:	02/12/10	Data File:	I0-0076 mb.029
Matrix:	Water	Instrument:	ICPMS1
Units:	ug/L (ppb)	Operator:	AP

Internal Standard:	% Recovery:	Lower Limit:	Upper Limit:
Germanium	105	60	125
Holmium	104	60	125

Analyte:	Concentration ug/L (ppb)
Copper	<1
Zinc	<1
Lead	<1

Date of Report: 02/23/10
Date Received: 02/11/10
Project: 1198001.010.011, F&BI 002117
Date Extracted: NA
Date Analyzed: 02/12/10

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TURBIDITY USING METHOD SM2130B

Results Reported as NTU

Sample ID Laboratory ID	Date Sampled	Time Sampled	Turbidity
CB331707 002117-01	11:50	02/11/10	32.5
CB330001 002117-02	11:35	02/11/10	57.4
Method Blank			<0.5

Date of Report: 02/23/10
Date Received: 02/11/10
Project: 1198001.010.011, F&BI 002117
Date Extracted: NA
Date Analyzed: 02/12/10

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR pH USING EPA METHOD 9040C

Sample ID Laboratory ID	pH
CB331707 002117-01	7.57
CB330001 002117-02	7.16

Date of Report: 02/23/10
Date Received: 02/11/10
Project: 1198001.010.011, F&BI 002117
Date Extracted: 02/18/10
Date Analyzed: 02/18/10

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 50-150)
CB331707 002117-01	580 x	1,500	99
CB330001 002117-02	1,700 x	4,000	98
Method Blank 00-0224 MB	<50	<250	95

Date of Report: 02/23/10
Date Received: 02/11/10
Project: 1198001.010.011, F&BI 002117

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 002119-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
Copper	ug/L (ppb)	19.2	19.3	1	0-20
Zinc	ug/L (ppb)	15.0	16.1	7	0-20
Lead	ug/L (ppb)	<1	<1	nm	0-20

Laboratory Code: 002119-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Copper	ug/L (ppb)	20	19.2	106 b	50-150
Zinc	ug/L (ppb)	50	15.0	104 b	50-150
Lead	ug/L (ppb)	10	<1	104	50-150

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Copper	ug/L (ppb)	20	107	70-130
Zinc	ug/L (ppb)	50	107	70-130
Lead	ug/L (ppb)	10	104	70-130

Date of Report: 02/23/10
Date Received: 02/11/10
Project: 1198001.010.011, F&BI 002117

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TURBIDITY USING METHOD SM2130B

Laboratory Code: 002119-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
Turbidity	NTU	<0.5	<0.5	nm	0-20

Date of Report: 02/23/10
Date Received: 02/11/10
Project: 1198001.010.011, F&BI 002117

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR pH BY METHOD 9040C

Laboratory Code: 002117-01 (Duplicate)

Analyte	Sample Result	Duplicate Result	Relative Percent Difference	Acceptance Criteria
pH	7.57	7.59	0	0-20

Date of Report: 02/23/10
Date Received: 02/11/10
Project: 1198001.010.011, F&BI 002117

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	108	110	69-135	2

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

A1 – More than one compound of similar molecule structure was identified with equal probability.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte indicated may be due to carryover from previous sample injections.

d - The sample was diluted. Detection limits may be raised due to dilution.

ds - The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.

dv - Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.

fb - Analyte present in the blank and the sample.

fc – The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.

ht - Analysis performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j – The result is below normal reporting limits. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.

jr - The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the compound indicated is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc – The sample was received in a container not approved by the method. The value reported should be considered an estimate.

pr – The sample was received with incorrect preservation. The value reported should be considered an estimate.

ve - Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Charlene Morrow, M.S.
Yelena Aravkina, M.S.
Bradley T. Benson, B.S.
Kurt Johnson, B.S.

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February 23, 2010

DUPLICATE

INVOICE # 10ACUNAA0223-8

Accounts Payable
Alaskan Copper Works
628 South Hanford
Seattle, WA 98134

RE: Project 1198001.010.011, PO M124536, F&BI 002117 - Results of testing requested by Joe Kalmar for material submitted on February 11, 2010.

2 samples analyzed for Total Zn, Cu, and Pb by Method 200.8 @ $75 per sample	$ 150.00
2 samples analyzed for pH by Method 9040C @ $25 per sample	50.00
2 samples analyzed for Turbidity by Method SM2130B @ $25 per sample	50.00
2 samples analyzed for Diesel Extended by Method NWTPH-Dx @ $60 per sample	120.00
Amount Due	$ 370.00

FEDERAL TAX ID # (b) (6)

002117 BILL TO ALASKAN COPPER WORKS PO # M124536 ME 02/11/10 AI3

AKC-0005058

☒ Seattle/Edmonds (425) 778-0907
☐ Tacoma (253) 926-2493
☐ Spokane (509) 327-9737
☐ Portland (503) 542-1080
☐ ______

LANDAU ASSOCIATES

Chain-of-Custody Record

Date 2/11/10
Page 1 of 1

Project Name ALASKAN COPPER WORKS Project No. 1198001.010.011
Project Location/Event SEATTLE, WA / 1st QUARTER SAMPLING 2010
Sampler's Name CNV
Project Contact JOE KALMAR / GERALD THOMPSON
Send Results To " "

Testing Parameters: OIL/GREASE (cancel) | TURBIDITY/pH | ~~Hardness~~, TOTAL Cu | TOTAL Zn, TOTAL Pb | NWTPH-Dx | Lab ID

Turnaround Time: ☒ Standard ☐ Accelerated ☐ ______

Sample I.D.	Date	Time	Matrix	No. of Containers	OIL/GREASE	TURBIDITY/pH	TOTAL Cu	TOTAL Zn, TOTAL Pb	NWTPH-Dx							Lab ID
CB331707	2/11/10	1150	AQ	3	X	X	X		✓							01 A-C
CB330001	2/11/10	1135	AQ	3	X	X	X		✓							02 A-C

Samples received at 10 °C

Observations/Comments
analyze ✓ – per Christoph Venot. 2/17/10 ME
cancel hardness and O+G per CV 2/17/10 ME

X Allow water samples to settle, collect aliquot from clear portion
X NWTPH-Dx - run acid wash/silica gel cleanup

___ run samples standardized to ______ product
___ Analyze for EPH if no specific product identified

VOC/BTEX/VPH (soil):
___ non-preserved
___ preserved w/methanol
___ preserved w/sodium bisulfate
___ Freeze upon receipt
___ Dissolved metal water samples field filtered

Other TSS ON SEPARATE COC.
2nd copy to Jenny T @ ALASKA Copper

Special Shipment/Handling or Storage Requirements: ON ICE
Method of Shipment: DROP OFF

Relinquished by	Received by	Relinquished by	Received by
Signature: [signature]	Signature: [signature]	Signature	Signature
Printed Name: Christophe Venot	Printed Name: Nhan Phan	Printed Name	Printed Name
Company: LAI	Company: FeBI	Company	Company
Date 2/11/10 Time 1525	Date 2/11/10 Time 15:25	Date Time	Date Time

WHITE COPY - Project File YELLOW COPY - Laboratory PINK COPY - Client Representative

Rev 8/09

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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Kurt Johnson, B.S.

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February 23, 2010

Joe Kalmar, Project Manager
Landau Associates
130 2nd Ave. S.
Edmonds, WA 98020

Dear Mr. Kalmar:

Included are the results from the testing of material submitted on February 11, 2010 from the 1198001.010.011, F&BI 002117 project. There are 11 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Gerald Thompson, Alaskan Copper Works
NAA0223R.DOC